

Patent claims

1. A magnetic coupling arrangement for transmitting torque from an input shaft to an output shaft, whereby at least one magnet arrangement is assigned to the input shaft and to the output shaft, and whereby a containment shell comprising at least one inner sleeve and at least one outer sleeve extends between the magnet arrangements, characterized in that the inner sleeve is formed from at least one profile element (7) that extends approximately in the manner of a coil and in that the outer sleeve is provided for axially fastening the profile element (7).
2. A magnetic coupling arrangement as set forth in claim 1, characterized in that the profile element (7) exhibits at a first side a groove (8) and at a second side that is oriented parallel to the first side, a protrusion (9) that is fitted to the groove (8), such that the protrusion (9) and the groove (8) of adjacent windings (18) of the profile element (7) that extends in the manner of a coil are engaged in one another.
3. A magnetic coupling arrangement as set forth in claim 1 or 2, characterized in that a sealing material (10) is provided at least at one of the two sides of the profile element (7).

4. A magnetic coupling arrangement as set forth in claim 3, characterized in that a sealing tape is provided as the sealing material (10).

5. A magnetic coupling arrangement as set forth in one of the previous claims, characterized in that the outer sleeve exhibits an approximately cylindrical jacket (11) with an approximately circular bottom (12).

6. A magnetic coupling arrangement as set forth in claim 5, characterized in that the jacket (11) is slotted in the longitudinal direction at least in sections.

7. A magnetic coupling arrangement as set forth in claim 5, characterized in that the jacket (11) is notched in the longitudinal direction at least in sections.

8. A magnetic coupling arrangement as set forth in claim 7, characterized in that the jacket (11) exhibits several notches (13) in succession in the longitudinal direction.

9. A magnetic coupling arrangement as set forth in claim 8, characterized in that each notch (13) in the remaining wall thickness of the jacket (11) exhibits at least one hole (15).

10. A magnetic coupling arrangement as set forth in claim 8 or 9, characterized in that each notch (13) in the remaining wall thickness of the jacket (11) is perforated.

11. A magnetic coupling arrangement as set forth in one of the claims 6 to 10, characterized in that the jacket (11) of the outer sleeve exhibits a means of sealing on the outer side and/or on the inner side.

12. A magnetic coupling arrangement as set forth in one of the claims 6 to 11, characterized in that at least one support ring (14) is provided between the notched and/or slotted sections of the jacket (11) in the direction of the circumference.

13. A magnetic coupling arrangement as set forth in one of the previous claims, characterized in that the bottom (12) of the outer sleeve compresses the windings (18) of the profile element (7) such that the profile element (7) can be fastened in the axial direction at a flange (6) that is directly connected to the housing.

14. A magnetic coupling arrangement as set forth in claim 13, characterized in that a spring-loaded connection is provided between the inner sleeve and outer sleeve.

15. A magnetic coupling arrangement as set forth in claim 14, characterized in that at least one spring element (16) is located between the bottom (17) of the inner sleeve and the bottom (12) of the outer sleeve.

16. A magnetic coupling arrangement as set forth in claim 14 or 15, characterized in that the bottom (17) of the inner sleeve is fastened to the last winding of the profile element (7) that is pointing in the direction of the bottom (17).

17. A magnetic coupling arrangement as set forth in one of the previous claims, characterized in that at least one outer magnet arrangement (3) is provided that is fastened to the input shaft (1).

18. A magnetic coupling arrangement as set forth in one of the previous claims, characterized in that at least one inner magnet arrangement (4) is provided that is fastened to the output shaft (2).

19. A magnetic coupling arrangement as set forth in one of the previous claims, characterized in that each magnet arrangement (3,4) exhibits at least one magnet ring (19) that exhibits in the radial direction at least one alternating polarity (N, S).

20. A magnetic coupling arrangement as set forth in claim 17, characterized in that several magnet rings (19) with the same polarity (N, S) are arranged in the longitudinal direction with or without gap and form a group.

21. A magnetic coupling arrangement as set forth in claim 20, characterized in that each magnet arrangement (3,4) exhibits several groups with differing polarity in relation to one another that are arranged in the longitudinal direction with or without gap.

22. A magnetic coupling arrangement as set forth in claim 20 or 21, characterized in that the respective gap is assigned to a support ring (14).

23. A magnetic coupling arrangement as set forth in claim 17 or 22, characterized in that the respective magnet arrangements (3,4) are arranged at the outer sleeve and at the inner sleeve in relation to one another such that magnets with different polarity (N, S) are always located opposite to one another.